

CLAIMS

1. An electronic component comprising:
a substrate and at least two piezoelectric resonators each having an
5 active element, a lower electrode and an upper electrode, wherein the lower
electrode of the first resonator is made of a material that is different from that
of the lower electrode of the second resonator such that the resonators exhibit
different resonance frequencies.
- 10 2. The electronic component according to Claim 1, wherein the resonance
frequencies differ by at least 10%.
3. The electronic component according to Claim 1, wherein each
resonator includes a lower electrode, an active element and an upper
15 electrode, the lower electrode of a first resonator being of different thickness
from that of the lower electrode of a second resonator.
4. The electronic component according to Claim 1, wherein each
resonator includes a lower electrode, an active element and an upper
20 electrode, the upper electrode of a first resonator being made of a material
that is different from that of the upper electrode of a second resonator.

5. The electronic component according to Claim 1, wherein each resonator includes a lower electrode, an active element and an upper electrode, the upper electrode of a first resonator being of thickness that is different from that of the upper electrode of a second resonator.

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6. The electronic component according to Claim 1, wherein each resonator includes a lower electrode, an active element and an upper electrode, the active element of a first resonator being made of a material that is different from that of the active element of a second resonator.

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7. The electronic component according to Claim 1, wherein each resonator includes a lower electrode, an active element and an upper electrode, the active element of a first resonator being of thickness that is different from that of the active element of a second resonator.

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8. The electronic component according to Claim 1, wherein it includes at least three resonators exhibiting resonance frequencies belonging to at least three different frequency bands.

20 9. The electronic component according to Claim 1, wherein it includes four resonators exhibiting resonance frequencies belonging to four different frequency bands.

10. The electronic component according to Claim 1, wherein the electrodes are made of a material chosen from aluminum, copper, molybdenum, nickel, titanium, niobium, silver, gold, tantalum, lanthanum, platinum and tungsten.
- 5 11. The electronic component according to Claim 1, wherein the active element includes crystalline aluminum nitride, zinc oxide, zinc sulphide, ceramic including LiTaO_3 , LiNbO_3 , PbTiO_3 , PbZrTiO_3 , KNbO_3 and/or lanthanum.
- 10 12. The electronic component according to Claim 1, wherein the active element has a thickness of between 0.5 and 5 μm , preferably between 1 and 3 μm .
13. The electronic component according to Claim 1, wherein the electrodes
- 15 have a thickness of less than 1 μm , preferably less than 0.3 μm .

14. An integrated circuit comprising:
a circuit supporting substrate; and
a component comprising:

at least a portion of the circuit supporting substrate and at least
5 two piezoelectric resonators each having an active element, a lower electrode
and an upper electrode, wherein the lower electrode of the first resonator is
made of a material that is different from that of the lower electrode of the
second resonator such that the resonators exhibit different resonance
frequencies.

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15. The integrated circuit according to Claim 14, wherein the component
includes at least three resonators exhibiting resonance frequencies belonging
to at least three different frequency bands.

16. A hybrid circuit comprising:
at least one hybrid circuit element; and
a component, electrically coupled to the at least one hybrid circuit element, the component comprising:

5 a substrate and at least two piezoelectric resonators each having an active element, a lower electrode and an upper electrode, wherein the lower electrode of the first resonator is made of a material that is different from that of the lower electrode of the second resonator such that the resonators exhibit different resonance frequencies.

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17. The hybrid circuit according to Claim 16, wherein the component includes at least three resonators exhibiting resonance frequencies belonging to at least three different frequency bands.

18. A filter comprising:

at least one filter circuit element; and

at least one component, electrically coupled to the at least one filter circuit element, the at least one component comprising:

5 a substrate and at least two piezoelectric resonators each having an active element, a lower electrode and an upper electrode, wherein the lower electrode of the first resonator is made of a material that is different from that of the lower electrode of the second resonator such that the resonators exhibit different resonance frequencies.

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19. The filter circuit according to Claim 18, wherein the at least one component includes at least three resonators exhibiting resonance frequencies belonging to at least three different frequency bands.

20. A process for fabricating an electronic component, in which at least two piezoelectric resonators are formed on a substrate, each resonator being provided with an active element and an electrode, the electrode of the first resonator being made of a material that is different from that of the electrode
- 5 of the second resonator such that the resonators exhibit resonance frequencies that differ by more than 10%.